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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/779,395

02/13/2004

Kenny Cheng

085.11049-US (05-812)

9005

52237 7590 05/09/2008
BACHMAN & LAPOINTE, P.C. (P&W)
900 CHAPEL STREET
SUITE 1201
NEW HAVEN, CT 06510-2802

EXAMINER

ELVE, MARIA ALEXANDRA

ART UNIT

PAPER NUMBER

3742

MAIL DATE

DELIVERY MODE

05/09/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/779,395	Applicant(s) CHENG ET AL.	
	Examiner M. Alexandra Elve	Art Unit 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-11,13-21,23 and 24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-11,13-21,23 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5-10, 13-20 & 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tewari (USPN 6,495,793) in view of Gray et al. (USPN 6,387,541) and Funkhouser et al. (USPN 5,449,536) OR over Tewari in view of Gray et al. and Whitney et al. (USPN 5,043,548).

Tewari discloses the repair of a turbine part (aircraft part) such a defocused laser (14) in which repair powder (22) is deposited in the laser beam over a laser spot (10). Powder is melted and fused by the laser beam and deposited as a molten repair material at the surface (12) of the laser spot. The airfoil (in this case) is ground to a selected dimension to remove damaged material. The laser beam from the laser is focused away from the workpiece surface. After welding the welds were heat treated and subjected to a final machining. (abstract, figures, col. 2, lines 10-15, col. 4, lines 40-60, col. 5, lines 3-36)

Tewari teaches damage from high temperatures, but not specifically sulphidation. Tewari discloses a focus point above the workpiece, but not the exact dimensions.

Gray et al. discloses a turbine blade, aerofoil, platform and root, which must be protected from oxidation and sulphidation. The protective austenitic stainless steel coating and chromium oxide layer provides protection against high temperature turbine environments, i.e. material loss or degradation due to oxidation and/or corrosion i.e. sulphate attack. (abstract, figures, col. 3, lines 63-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to note that sulphidation, as taught by Gray et al. is essentially the same degradation process as in Tewari because they are both degradation processes which render the part in a damaged state.

Funkhouser et al. discloses a laser system in which powder is injected for the application of coatings on aerospace pumps, parts and so forth. The **focal point** of the laser may be from about **0.10 inches to 1.0 inch** above the surface of the workpiece (col. 7, lines 66-67 & col. 8, line 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the dimensions as taught by Funkhouser et al. in the Tewari et al. system because they are both directed towards the coating/deposition of material on a workpiece using a laser beam for melting the powder.

IN the alternative:

Whitney et al. discloses a laser system for depositing a coating onto nozzles and so forth. The **focal point** of the laser in the laser plasma spray apparatus is ordinarily maintained at a distance of at least **one to six inches** from the substrate, reducing the

heating of the substrate and completely avoiding melting of the substrate (col. 2, lines 36-41).

It would have been obvious to one of ordinary skill in the art at the time of the invention to the dimensions as taught by Whitney et al. in the Tewari et al. system because they are both directed towards the coating/deposition of material on a workpiece using a laser beam for melting the powder.

Claims 2, 11 & 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tewari, Gray et al. and Funkhouser et al. or Whitney et al., as stated in the above paragraph and further in view of Goodwater et al. (USPN 6,173,491).

Tewari and Gray et al. teach the removal of damaged material (grinding) prior to laser repair, but do not specifically teach other types of removal.

Goodwater et al. teaches the refurbishment of a turbine engine part (vanes, airfoils, platforms and so forth). Platforms are machined, using known machining processes (e.g. contour milling, automated belt sanding, manual belt sanding). Vacuum heat treatments are also performed during the machining, in order to restore the original microstructure. Following this the parts are laser clad. Final machining and coating is performed in order to restore the dimensions, surface finish and other critical features. (abstract, figures, col. 5-6)

It would have been obvious to one of ordinary skill in the art at the time of the invention to use abrasive machining, as taught by Goodwater et al. in the Tewari and

Gray et al. process because these are merely specific methods for removing damaged material.

Response to Arguments

Applicant's arguments filed 2/18/08 have been fully considered but they are not persuasive.

Applicant argues that claim limitations 0.10 inches to about 1 inch are not new matter. The argument is moot since the applicant has met incorporation by reference and essential material requirements. Hence the new matter rejection is withdrawn.

Applicant argues that Tewari does not suggest performing other types of repairs such as dimensional restoration. The examiner respectfully notes that dimensional restoration is not a claim limitation. Furthermore, Tewari discloses the repair of an airfoil (for example) in which the "outer tip is repaired, that is, powder is melted and deposited as a molten repair material on the airfoil tip substrate". The airfoil is repaired and obviously would regain essentially its original dimensions. Thus the airfoil has been dimensionally restored.

Applicant argues that the examiner relies upon the teachings of Gray, Funkhouser and Whitney to provide requisite motivation to alter the basic teachings of Tewari and teach the dimensional restoration steps in applicant's claims. The examiner respectfully disagrees the references where used to teach sulphidation and focal distance. Furthermore, applicant does not have the claim limitation of "dimensional

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restoration". Additionally, Tewari does teach dimensional restoration because damaged material is ground out of the airfoil and then repair welded with powder molten by the laser and deposited into the repair area. Thus the airfoil has been dimensionally restored.

Applicant argues that none of the four references (Tewari, Gray, Funkhouser and Whitney) mentions anything about heat treating or machining the repaired component after laser cladding takes place. The examiner respectfully disagrees because Tewari discloses:

...After welding (cladding), the welds were heat treated, final machined to design dimensions, blended to the airfoil shape, cleaned... (col. 5, lines 30-32)

Applicant argues that Goodwater does not teach abrasive cleaning, such as grit blasting. The examiner respectfully notes that grit blasting is not a claim limitation.

Goodwater does teach abrasive cleaning:

Platforms 4 and 6 are then machined, using known machining processes (e.g. contour milling, automated belt sanding, manual belt sanding)... (col. 5, lines 14-16)

It is well known that milling and sanding are abrasive and hence meet the claim limitation of abrasive cleaning.

Applicant argues that Goodwater does not teach the removal of sulphidation. The examiner respectfully notes that sulphate attack is taught by Gray et al. In response to applicant's arguments against the references individually, one cannot show

nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

This is a RCE of applicant's earlier Application No. 11/060,937. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Alexandra Elve whose telephone number is 571-272-1173. The examiner can normally be reached on 7:30-4:00 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu B. Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

May 6, 2008.

/M. Alexandra Elve/
Primary Examiner, Art Unit 3742